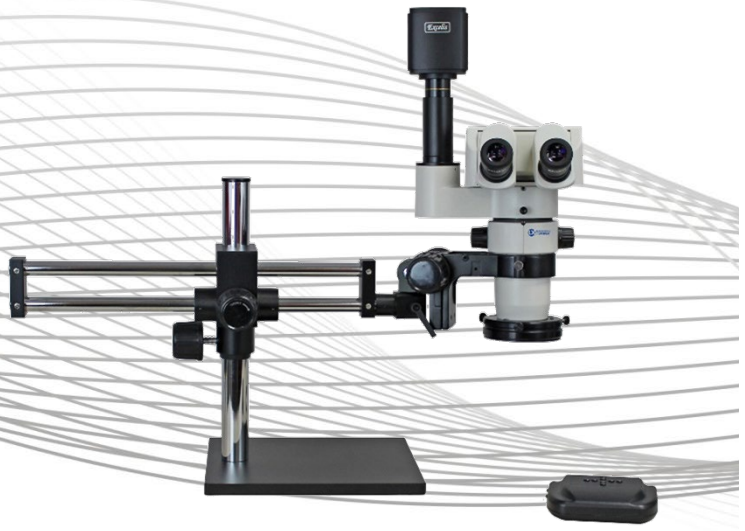
UNITRON®

MICROSCOPES by UNITRON

System 374

ZOOM STEREO MICROSCOPE



MANUAL

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CONTENTS

SAFETY NOTES

1. Open the shipping carton carefully to prevent any accessory, i.e. objectives or eyepieces, from dropping and being damaged.
2. Keep the instrument out of direct sunlight, high temperature or humidity, and dusty environments.
3. If any specimen solutions or other liquids splash onto the stage, objective or any other component, disconnect the power cord immediately and wipe up the spillage. Otherwise, the instrument may be damaged.
4.  **LAMP REPLACEMENT -- CAUTION**: the glass housing of the lamp may be extremely hot. DO NOT attempt to change the lamp before it is completely cooled or without wearing adequate skin protection.
5. All electrical connectors (power cord) should be inserted into an electrical surge protector to prevent damage due to voltage fluctuations.
6.  **FUSE REPLACEMENT** -- For safety when replacing the fuse (ONLY replace with the same size, type and rating of original fuse), be sure the main switch is in the off position, disconnect the power cord from outlet, and replace the fuse. Reconnect the power cord and turn unit on.
7. Confirm that the input voltage indicated on your microscope corresponds to your line voltage. The use of a different input voltage other than indicated will cause severe damage to the microscope. NOTE: Always plug the microscope power cord into a suitable grounded electrical outlet. A grounded 3-wire cord is provided.

CARE AND MAINTENANCE

1. Do not attempt to disassemble any component including eyepieces, objectives or the focusing assembly.
2. Keep the instrument clean; remove dirt and debris regularly. Accumulated dirt on metal surfaces should be cleaned with a damp cloth. More persistent dirt should be removed using a mild soap solution. Do not use organic solvents for cleansing.
3. The outer surface of the optics should be inspected and cleaned periodically using an air bulb. If dirt remains on the optical surface, use a soft, lint free cloth or cotton swab dampened with a lens cleaning solution (available at camera stores). All optical lenses should be swabbed using a circular motion. A small amount of absorbent cotton wound on the end of a tapered stick makes a useful tool for cleaning recessed optical surfaces. Avoid using an excessive amount of solvents as this may cause problems with optical coatings or cemented optics or the flowing solvent may pick up grease making cleaning more difficult.
4. Store the instrument in a cool, dry environment. Cover the microscope with the dust cover when not in use.
5. UNITRON® microscopes are precision instruments which require periodic servicing to maintain proper performance and to compensate for normal wear. A regular schedule of preventative maintenance by qualified service personnel is highly recommended. Your authorized UNITRON® distributor can arrange for this service.

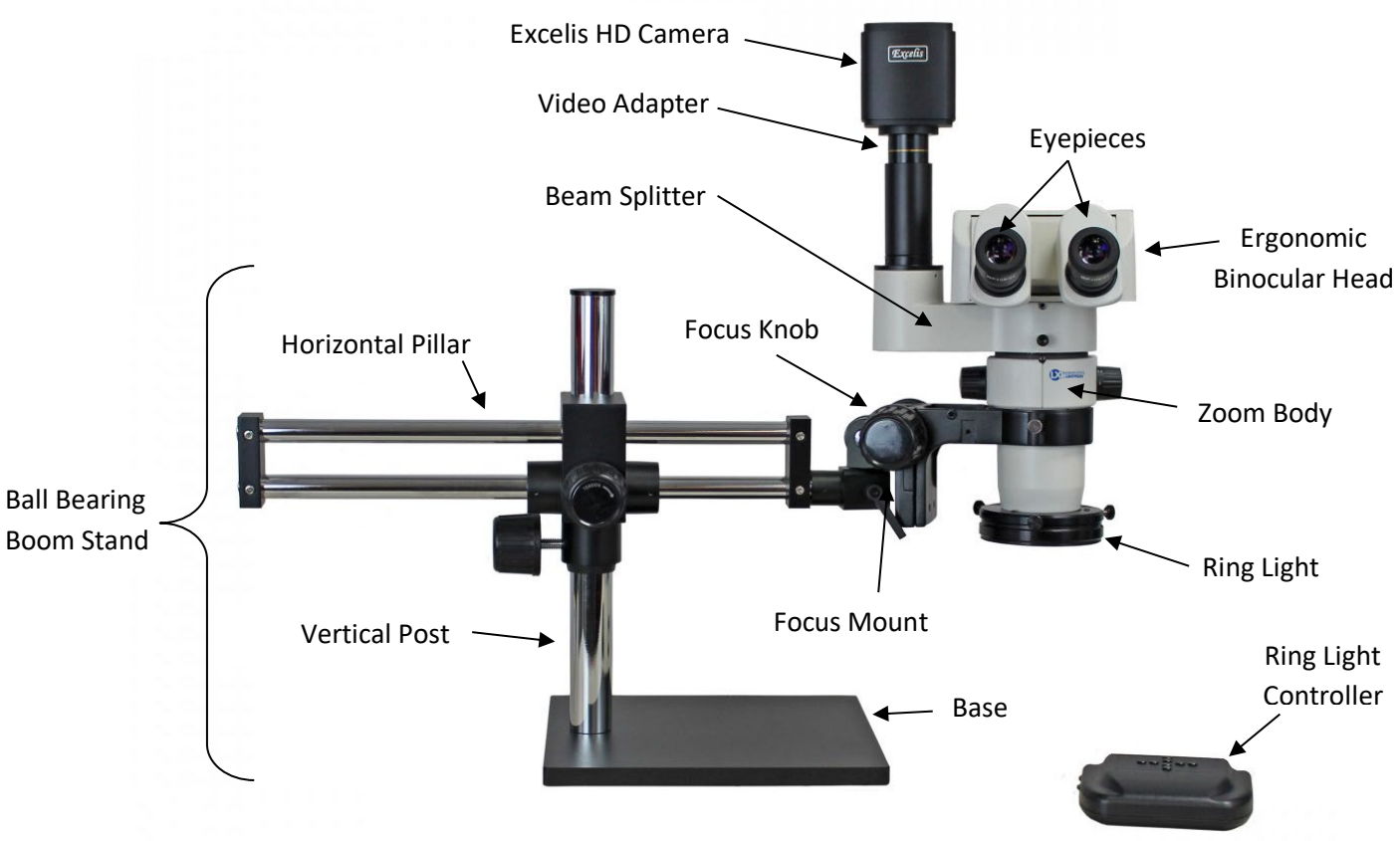
INTRODUCTION

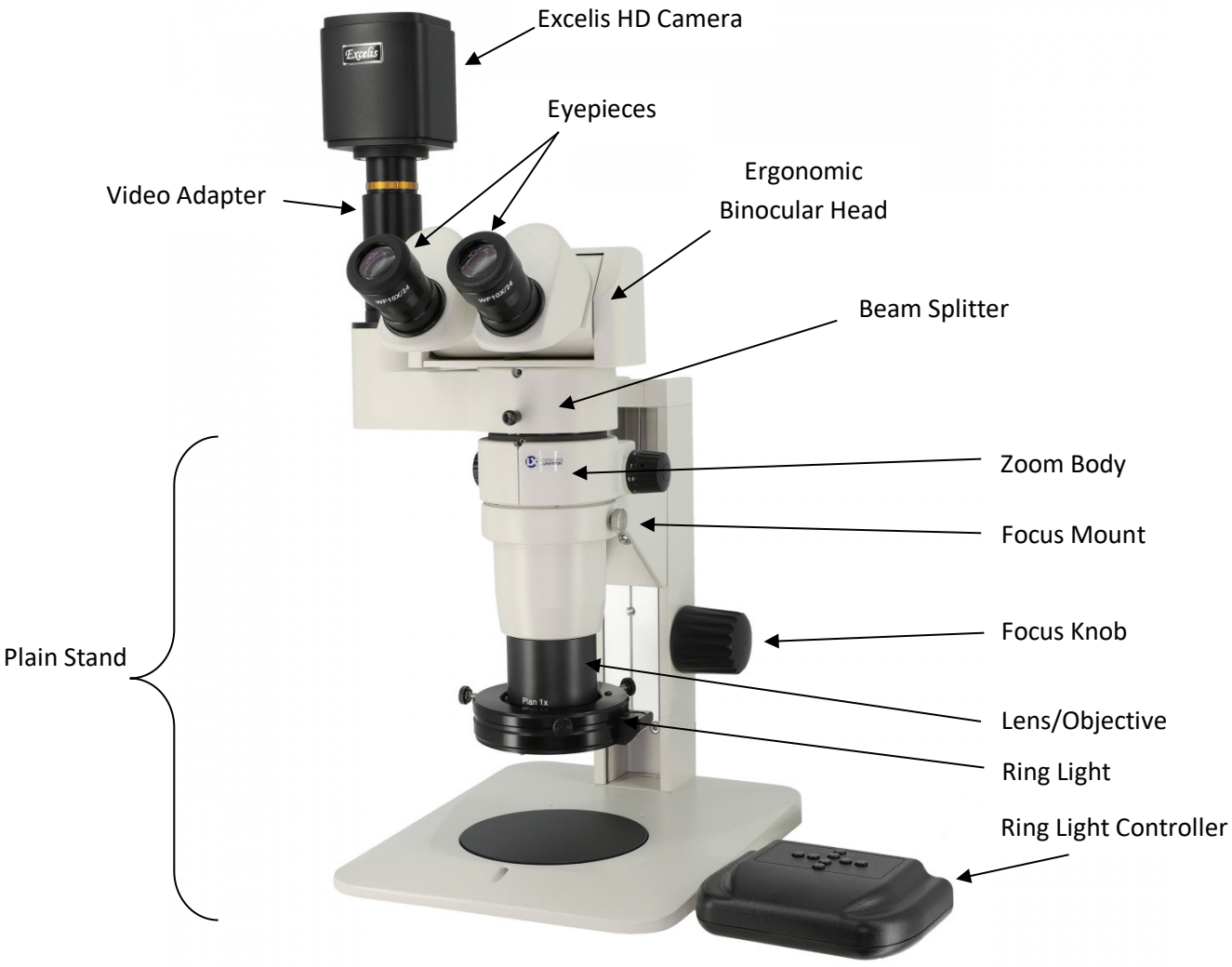
Congratulations on the purchase of your new UNITRON® microscope. UNITRON® microscopes are engineered and manufactured to the highest quality standards. Your microscope will last a lifetime if used and maintained properly. UNITRON® microscopes are carefully assembled, inspected and tested by our staff of trained technicians in our New York facility. Careful quality control procedures ensure each microscope is of the highest quality prior to shipment.

UNPACKING AND COMPONENTS

Your microscope arrived packed in a molded shipping carton. ***Do not discard the carton*****:** the shipping carton should be retained for reshipment of your microscope if needed. Avoid placing the microscope in dusty surroundings or in high temperature or humid areas as mold and mildew can form. Carefully remove the microscope from the shipping carton and place the microscope on a flat, vibration-free surface.

COMPONENTS DIAGRAM



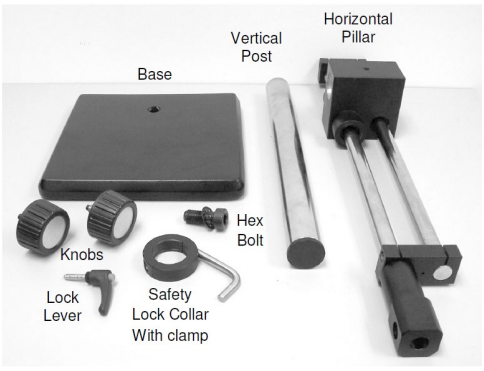

Excelis HD Camera
Eyepieces
Video Adapter
Ergonomic
Binocular Head
Beam Splitter
Zoom Body
Focus Mount
Focus Knob
Plain Stand
Lens/Objective
Ring Light
Ring Light Controller

ASSEMBLY

The following photos show how to assemble the various modules in the order of assembly.

When assembling the microscope, make sure that all parts are free of dust and dirt, and avoid scratching any parts or touching glass surfaces.

Assembling the Ball Bearing Boom Stand

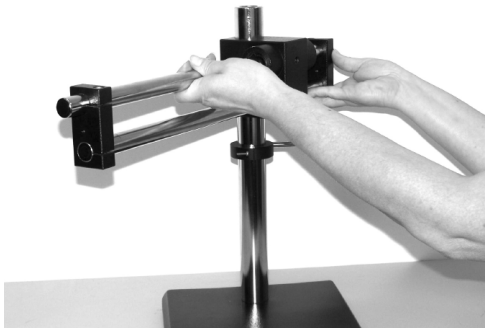


1. Carefully remove all parts from box and check for all package contents.

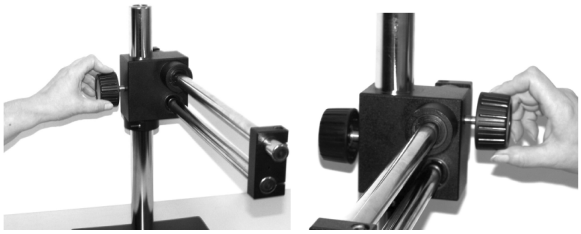
2. Place the base on the edge of a table as shown below. Use the hex wrench provided.

3. Place the base on the table and unscrew the cap on the vertical post.

4. Insert the safety lock collar onto the vertical post and tighten/lock it using the clamp.



5. Slide the horizontal pillar with cross block into the vertical post.

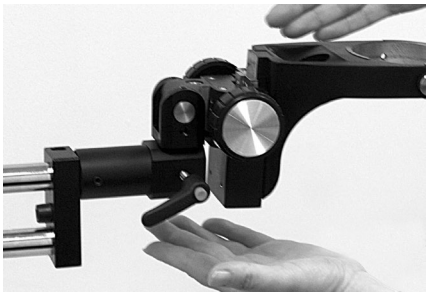


6. Adjust to the desired position and tighten the cross block on both sides using the 2 knobs.

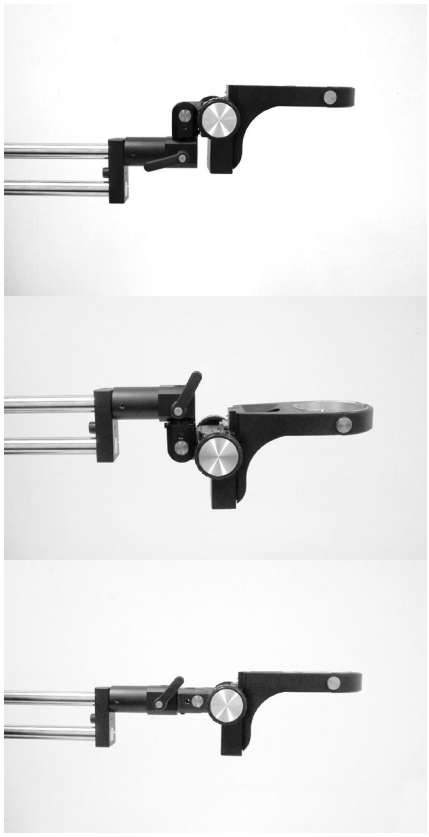
7. Replace the cap back onto the vertical post.

8. Screw the lock lever on the end of the horizontal pillar. This lock lever secures the e-arm or focus mount.

9. Insert the e-arm or focus mount into the end of the horizontal bar and tighten using the lock lever.



10. Adjust the e-arm or focus mount to desired level or position.



11. E-arm or focus mount can be inserted from the TOP, BOTTOM or HORIZONTALLY of the horizontal bar. Set e-arm or focus mount up at various angles and tighten the lock lever for oblique viewing.

Ball Bearing Boom Stand assembly is complete.

Assembling the Plain Stand

1. Set the stand flat on a work surface.

Insert the stage plate into the stand base.

Plain Stand assembly is complete.

2. Install the focus arm. Align the focus arm on the focus mount of the pillar as shown. Using the supplied hex key, attach the focus arm to the focus mount with the supplied hex screws.

Mounting the Zoom Body

1. Carefully place the zoom body into the focus mount and tighten the lock screw to secure the zoom body in place.

2. Use caution not to over tighten the locking screw as this may cause damage to the instrument.

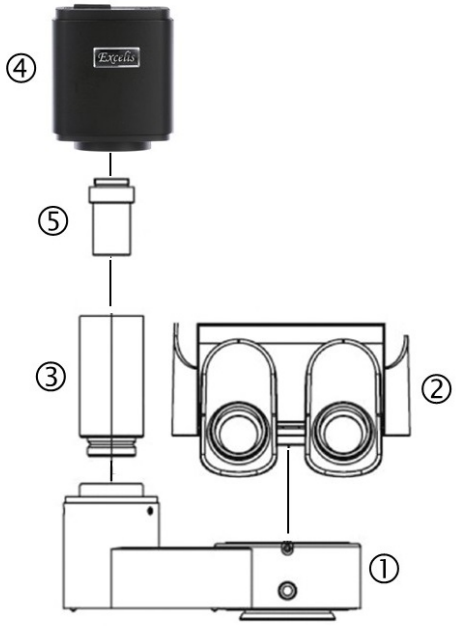
Mounting the Objective

1. Using care not to touch the lens surfaces, carefully thread the objective into the optical body.

Installing the Beam Splitter

1. Place the beam splitter onto the top of the optical body by matching the groove of the of the beam splitter's bottom and the securing screw of the optical body. Tighten the screw to secure the optical body and the beam splitter. Install the viewing head on top of the beam splitter and secure it with Allen screw.

Beam Splitter Assembly



1. Insert the viewing head ① into the beam splitter ② and secure it into place using a 2mm Allen key to tighten the screw.
2. Insert the standard connecting tube ③ into the beam splitter and secure it into place using a 2mm Allen key to tighten the set screw.
3. Remove the rubber plug inserted into the C-mount on the bottom of the Excelis camera ④ revealing the threads. Be careful not to touch the glass in the bottom of the camera.
4. Thread the video adapter ⑤ into the C-mount on the bottom of the camera.
5. Insert the video adapter into the standard connecting tube and secure into place using a 2mm Allen key to tighten the set screw.

Installing the Eyepieces

1. Remove the dust caps from the eyepiece tubes.
2. Insert the eyepieces into the eyepiece tube. Be sure to install the eyepieces all the way into the tube.
3. Set the eyepiece diopter scale for each eyepiece to 0.

Attaching the Ring Light

4. Remove the dust caps from the eyepiece tubes.
5. Insert the eyepieces into the eyepiece tube. Be sure to install the eyepieces all the way into the tube.
6. Set the eyepiece diopter scale for each eyepiece to 0.

ADJUSTMENT AND OPERATION

Adjusting Binocular Viewing Head

Fig. 6

Adjusting Interpupillary Distance (Fig. 6)

Different users have different interpupillary distances (this distance is between the centers of the pupils of each eye). When the operator of the microscope changes, it will be necessary to adjust the interpupillary distance.

While looking through the eyepieces, hold the left and right eyetubes of the viewing head and adjust the eyetubes by opening or closing them until the left and right fields of view coincide completely and you are able to see a complete circle.

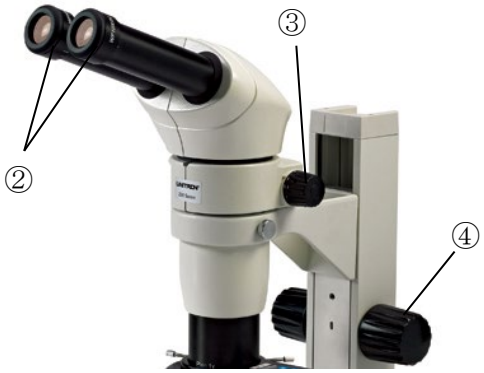


Fig. 7

Adjusting Diopter Ring/Focusing (Fig. 7)

Set the diopter rings ② of both eyepieces to “0” position. (Do this when users change, because different users will have different diopter settings.)

Place an easy-to-observe specimen on the stage plate, i.e., a coin.

Rotate the zoom knob ③ to the highest magnification, and turn the focusing knob ④ to focus the specimen.

Rotate the zoom knob ③ to the lowest magnification, looking only into the left eyepiece, adjust the diopter ring on left eyepiece to focus the specimen. Then repeat this procedure for the right eyepiece.

NOTE: The working distance (the distance between the microscope objective to the top of the specimen) of the microscope is 186mm (with 0.5X objective, included).

Focus Adjustment

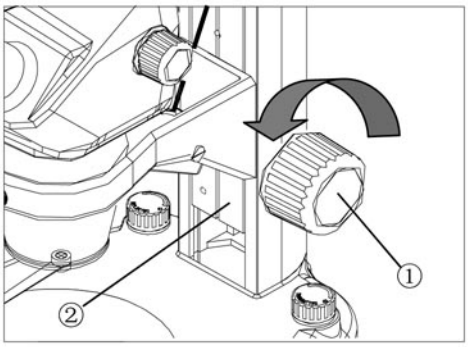


Fig. 8

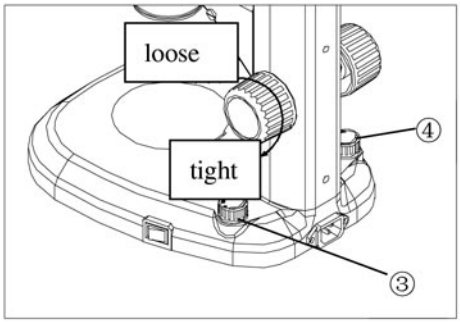


Fig. 9

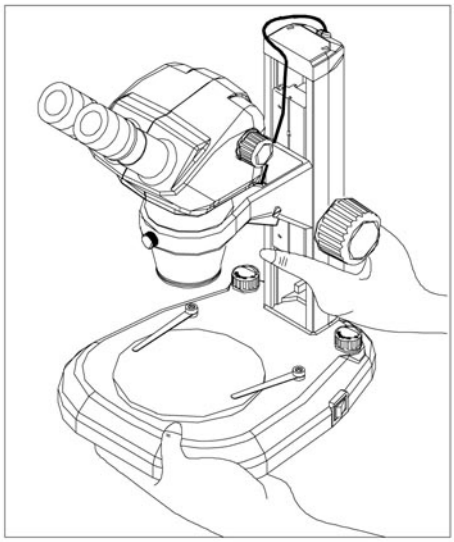


Fig. 10

Adjusting the Rotation Tension of the Focus Adjustment Knob (Fig. 8, Fig. 9)

To adjust tension, hold both left and right focus adjustment knobs ① with both hands, hold the left knob (to prevent it from turning), and rotate the right knob clockwise to increase (tighten) or counterclockwise to decrease (loosen) the focus knob tension.

After tension adjustment has been completed, always rotate both adjustment knobs in the same direction.

Changing the Magnification

The zooming knobs located on both sides of the zooming body will change the magnification of the specimen image.

Total Magnification = Magnification of zoom body x objective x magnification of eyepiece (i.e., 0.8 x 1.0 x 10 = 8X)

Moving the Microscope (Fig. 10)

Before moving the microscope, be sure to remove any slide/samples. When moving the microscope, hold the stand and base as shown in Fig. 10 to keep it level.

SPECIFICATIONS

System 374 6.3:1 Parallel Zoom Body

Objective Lens	Working Distance (mm)	EYEPIECE	
		WF 10X (Ø24mm)	
		Total Magnification	Visual Field (mm)
0.5X	186	4X – 25X	60 – 9.6
1.0X	78	8X – 50X	30 – 4.8

System 374 Trinocular Optical Data

	MAGNIFICATION*				
Accessory Lens	Magnification with Zoom @ 0.8	FOV (mm) with Zoom @ 0.8	Magnification with Zoom @ 5	FOV (mm) with Zoom @ 5	Working Distance
1.0X	23.1X	22.7	148.4X	3.6	78
0.5X	11.5X	45.4	74.2X	7.3	186

**1/2.8" CMOS HD camera with 22" monitor and 0.5X video adapter*

ISO 9001
Certification
Design and production adheres to ISO9001 international quality standard.

CE

ISO 14001
Certification
Design and production meets the requirements of international standard ISO 14001 for environmental management.

TROUBLESHOOTING

Under certain conditions, performance of this unit may be adversely affected by factors other than defects. If a problem occurs, please review the following list and take remedial action as needed. If you cannot solve the problem after checking the entire list, please contact your local dealer for assistance.

Trouble	Cause	Remedy
Double images	Interpupillary distance is not correct	Readjust it – page 12
	Diopter adjustment is not correct	Readjust it – page 12
Dirt appears in the view field	Dirt on the specimen	Clean specimen
	Dirt on the surfaces of eyepieces	Clean eyepieces
Image is not clear	Dirt on the surface of objectives	Clear objectives
Image is not clear while focusing change	Diopter adjustment is not correct	Readjust diopter – page 12
	Focusing is not correct	Readjust it – page 12
The focusing knob is not smooth	The focusing knob is too tight	Loosen it to a suitable position – page 13
The image is obscure because of the head slipping down during observation	The focusing knob is too loosen	Tighten it to a suitable position – page 13

MAINTENANCE

Please remember to ***never*** leave the microscope with eyepieces removed and always protect the microscope with the dust cover when not in use.

SERVICE

UNITRON® microscopes are precision instruments which require periodic servicing to keep them performing properly and to compensate for normal wear. A regular schedule of preventative maintenance by qualified service personnel is highly recommended. Your authorized UNITRON® distributor can arrange for this service. Should unexpected problems be experienced with your instrument, proceed as follows:

1. Contact the UNITRON® distributor from whom you purchased the microscope. Some problems can be resolved simply over the telephone.

2. If it is determined that the microscope should be returned to your UNITRON® distributor or to UNITRON® for warranty repair, pack the instrument in its original Styrofoam shipping carton. If you no longer have this carton, pack the microscope in a crush-resistant carton with a minimum of three inches of a shock absorbing material surrounding it to prevent in-transit damage. The microscope should be wrapped in a plastic bag to prevent Styrofoam dust from damaging the microscope. Always ship the microscope in an upright position; ***NEVER SHIP A MICROSCOPE ON ITS SIDE***. The microscope or component should be shipped prepaid and insured.

LIMITED MICROSCOPE WARRANTY

This microscope is warranted to be free from defects in material and workmanship for a period of five (5) years for mechanical and optical components and one (1) year for electrical components from the date of invoice to the original (end user) purchaser. This warranty does not cover damage caused in-transit, misuse, neglect, abuse or damage resulting from improper servicing or modification by other then UNITRON® approved service personnel. This warranty does not cover any routine maintenance work or any other work, which is reasonably expected to be performed by the purchaser. Normal wear is excluded from this warranty. No responsibility is assumed for unsatisfactory operating performance due to environmental conditions such as humidity, dust, corrosive chemicals, deposition of oil or other foreign matter, spillage or other conditions beyond the control of Unitron Ltd. This warranty expressly excludes any liability by Unitron Ltd. for consequential loss or damage on any grounds, such as (but not limited to) the non-availability to the End User of the product(s) under warranty or the need to repair work processes. Should any defect in material, workmanship or electronic component occur under this warranty contact your UNITRON® distributor or UNITRON® at (631) 543-2000. This warranty is limited to the continental United States of America. All items returned for warranty repair must be sent freight prepaid and insured to Unitron Ltd., 73 Mall Drive, Commack, NY 11725 – USA. All warranty repairs will be returned freight prepaid to any destination within the continental United States of America. For all foreign warranty repairs, return freight charges are the responsibility of the individual/company who returned the merchandise for repair.